Here, we calculate:

FutureValue(years) = principal × (1 + rate) ^ years

Recursively:

FutureValue(n) = FutureValue(n-1) * (1 + rate)

Time Complexity:

- **Recursive Approach:** O(n), where *n* is the number of years. But it may recompute values repeatedly in deeper stacks.
- **Memoized Version:** O(n), with better performance due to reuse of previously computed results.